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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/172,263 10/14/98 ISHII A PM256389

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EXAMINER

SPECTOR, D

ART UNIT

PAPER NUMBER

2873

DATE MAILED: 08/03/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/172,263

Applicant(s)
ISHII et al.

Examiner
David N. Spector

Group Art Unit
2873



- ☐ Responsive to communication(s) filed on _____.
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire THREE month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

- ☒ Claim(s) 1-38 is/are pending in the application.
- Of the above, claim(s) _____ is/are withdrawn from consideration.
- ☒ Claim(s) 1-3, 5, 10-17, 27, 28, and 32-38 is/are allowed.
- ☐ Claim(s) _____ is/are rejected.
- ☒ Claim(s) 4, 6-9, 18-26, and 29-31 is/are objected to.
- ☐ Claims _____ are subject to restriction or election requirement.

Application Papers

- ☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☒ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
- ☒ received.
- ☐ received in Application No. (Series Code/Serial Number) _____.
- ☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- *Certified copies not received: _____.
- ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- ☒ Notice of References Cited, PTO-892
- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 5
- ☐ Interview Summary, PTO-413
- ☒ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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DETAILED ACTION - REJECTION (NON-FINAL)

Claims - Objections

1. Claims 4, 6-9, 18-26, and 29-31 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only, and cannot depend from any other multiply dependent claim. See MPEP § 608.01(n). Accordingly, the claims 4, 6-9, 18-26, and 29-31 have not been further treated on the merits.

Allowable Subject Matter

2. Claims 1-3, 5, 10-17, 27-28, and 32-38 are allowed. The prior art taken either singly or in combination fails to anticipate or fairly suggest the limitations of applicant's independent claims, in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper. The examiner's reasons for allowance follows.

3. Applicant's independent claims 1, 10-17, 27, 32, and 35-38 are each directed to improvements on the basic design of a particular class of compact zoom lenses. The object of these improvements is to reduce size and weight by minimizing the total number of constituent lens elements, while simultaneously maintaining and/or improving the image quality of the zoom lens system.

A. Applicant's independent claims each includes a set of features/limitations that are known from prior art, and which constitute a "baseline" for the improvements/inventions of the independent claims. The baseline features include: first positive lens group **G1**; second negative lens group **G2**, third positive lens group **G3**; fourth positive lens group **G4**. During zooming from the wide-angle end to a telephoto end of the system: while **G1** remains fixed, **G2** moves from the object side to the image side; **G3** moves from the image side to the object side; and **G4** moves to keep the image plane at a constant position. The particular elements of applicant's claims which constitute the improvements/inventions of the independent claims are detailed in subparagraphs B-E, below.

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B. With respect to the independent CLAIM 1, **G1** consists of two lenses, a negative lens and a positive lens; or one positive lens alone. **G3** includes three lenses, a positive lens, a positive lens, and a negative lens; or two lenses, a positive lens and a negative lens. **G3** further includes at least one aspherical surface.

C. Claims 10-17 each adds one or more features/limitations to the baseline zoom lens configuration. CLAIM 10 includes the limitation $0.5 < |F_2/F_3| < 1.2$; CLAIM 11 includes the limitation $0.49 < |L_3/L_2| < 1$; CLAIM 12 includes the limitation $2 < (F_{3.4w})/IH < 3.3$. CLAIM 13 includes the following limitations: the lens group **G3** expressly includes a positive lens convex on the object side, and a negative doublet consisting of a positive lens convex on the object side and a negative lens convex on the image side. CLAIM 14 includes the two limitations $0.5 < |F_2/F_3| < 1.2$ and $0.49 < |L_3/L_2| < 1$; CLAIM 15 includes the two limitations $0.5 < |F_2/F_3| < 1.2$ and $2 < (F_{3.4w})/IH < 3.3$; CLAIM 16 includes the two limitations $0.49 < |L_3/L_2| < 1$ and $2 < (F_{3.4w})/IH < 3.3$; and CLAIM 17 includes all three limitations $0.5 < |F_2/F_3| < 1.2$, $0.49 < |L_3/L_2| < 1$ and $2 < (F_{3.4w})/IH < 3.3$.

D. Claims 27, 32, 34, and 35 further limit the baseline zoom lens with the following structural features/limitations. In CLAIM 27, **G1** consists of a single positive lens and the object-most lens in **G2** is negative and the limitation $v_{21} < 40$ is imposed on the dispersion of this negative lens element. In CLAIM 32, **G3** includes a doublet consisting of a positive lens and a negative lens, **G4** consists of a single positive lens, and **G3** is further limited to move constantly from the image side to the object side during zooming from the wide-angle end to the telephoto end. In CLAIM 34 each of the lens groups **G2** and **G3** includes a doublet consisting of a positive lens and a negative lens, and **G3** is further limited to move constantly from the image side to the object side during zooming from the wide-angle end to the telephoto end. In CLAIM 35, **G3** has constant motion during zooming and includes a positive lens and a doublet consisting of a positive lens and a negative lens.

E. With respect to each of the independent claims 36-38, applicant generalizes the description of the zooming motions each of the four lens groups to the conditions that the spaces between **G1** and **G2**, between **G2** and **G3**, and between **G3** and **G4** vary independently during zooming and adds

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the following limitations to improvements/inventions commensurate with these claims. In CLAIM 36, **G3** consists of a double convex positive lens; and a doublet consisting of a positive meniscus lens convex toward the object side; and a negative meniscus lens. The group **G4** consists of a double convex lens with its larger radius of curvature directed toward the object side. In CLAIM 37, **G1** consists of a single positive lens; **G2** consists of (in order from the object side) a single lens and a doublet consisting of a negative and a positive lens; **G3** consists of a single lens and a doublet consisting of a positive and a negative lens. In CLAIM 38, **G1** consists of either two lenses or a positive lens and a negative lens; **G2** and **G3** each contain a doublet consisting of a at least one set of a positive lens and a negative lens.

Pertinent Prior Art

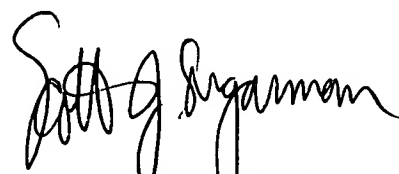
4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The compact zoom lens disclosed in Shibata et al. (U.S. Patent 5,418,646) is typical of the prior art cited by applicant as being improved by the invention(s) commensurate with the independent claims. Ikari (U.S. Patent 5,664,433), Sato (U.S. Patent 5,546,231), Ueda (U.S. Patent 5,414,562), Shibata (U.S. Patent 5,231,540), Ishii et al. (U.S. Patent 5,189,558), and Tanaka (U.S. Patent 4,859,042) disclose other pertinent examples of prior art systems.

Contact Information

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David N. Spector whose telephone number is (703) 305-1521. The examiner can normally be reached from 6:30 AM to 3:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Y. Epps, can be reached on (703) 308-4883. The fax number for the organization where this application is assigned is (703) 308-7722.


David N. Spector

July 28, 1999


Scott J. Sugarman
Primary Examiner